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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/610,188	07/05/2000	Jon C. Taenzer	022577-590	5001

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EXAMINER

PENDLETON, BRIAN T

ART UNIT PAPER NUMBER

2644

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/610,188

Applicant(s)

TAENZER ET AL.

Examiner

Brian T. Pendleton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 July 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/9/2002.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 11-17, 20-24, 27-31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al, US Patent 5,848,172 in view of Killion et al, US Patent 6,327,370. Allen discloses a second order microphone system in figure 1 comprising omni-directional microphones P1, S1, S2 and P2, electrical time delays τ' , τ and combining unit 103. The microphones P1, S1 define one first-order element and the microphones P2, S2 define the other first-order element. Allen does not specify that the first order microphone elements have a finite delay ratio greater than one. Killion discloses a hearing aid having plural pressure gradient microphones (see figure 20). In column 3 lines 9-27, it was suggested that second order directional microphones, while providing a narrower directional signal, are less sensitive than first and omni-directional microphones at frequencies below 2 kHz. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the second order microphone system of Allen by changing the electrical time delays of the first order elements to have a delay ratio greater than one for the purpose of shifting the overall microphone system closer to a first order microphone system thereby retaining some of the benefits of a second order directional microphone yet at the same time gaining sensitivity. Claims 1-5, 8, and 11-13 are met. Per claims 14, 17, 20, and 21, the modified Allen apparatus would have each first

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order microphone element having no null in order to make the functionality of the second order microphone system closer to that of a first order microphone system. As to claims 28, 29, 31, and 35, one of ordinary skill in the art would have been motivated to test the microphone system to match the microphone elements, as it improves the performance of the system. It would have been obvious to one of ordinary skill in the art at the time of invention to provide a test sound to the microphone elements and use the output of the microphone elements to match the elements. Regarding claims 6-7, 15, 16, 22-24, 27, and 30, one of ordinary skill in the art would have realized the claimed delay ratio range without undue experimentation in the pursuit of the optimal microphone system for a particular application.

Claims 9, 10, 18, 19, 25, 26 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen in view of Killion as applied to claims 1, 14, 22 and 28 above, and further in view of Thompson. The combination of Allen and Killion does not disclose a matching function. Thompson discloses an apparatus and method for matching the response of microphones. It was suggested to match the response of microphones in directional microphones in hearing aids to improve directional processing. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to use a matching function in the combination of Allen and Killion for the purpose of improving the hearing aid's performance. As to claims 10, 19, 26 and 33-34, it was obvious to use a processor to combine microphone signals at the time of invention.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian T. Pendleton whose telephone number is (703) 305-9509. The examiner can normally be reached on M-F 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



btp